LinkSys RV042 Router Installation Instructions

Part 1 | Basic Configuration of Your Broadband VPN Router

Before you attempt to log into the web-based Administration, please verify the following.
1. Your browser is configured properly (see below).
2. Disable any firewall or security software that may be running.
3. Confirm that you have a good link LED where your computer is plugged into the Router.
If you don't have a link light, then try another cable until you get a good link.

1.1 | Browser Configuration

Confirm your browser is configured for a direct connection to the Internet using the Ethernet cable that is installed in the computer. This is configured through the options/preference section of your browser.
You will also need to verify that the HTTP Proxy feature of your web browser is disabled. This is so that your web browser will be able to view the Router configuration pages. The following steps are for Internet Explorer and for Netscape. Determine which browser you use and follow the appropriate steps.

Internet Explorer 5 or above (For Windows)
1. Open Internet Explorer. Click Tools, and then select Internet Options.
2. In the Internet Options window, click the Connections tab.
3. Click the LAN Settings button.
4. Clear the "Use a proxy server for your LAN" checkbox and click OK to save these LAN settings changes.
5. Click OK again to close the Internet Options window.

Netscape 7.2 or Mozilla
1. Open the Netscape browser.
2. Click the Edit drop down menu and select Preferences.
3. Double click to expand the "advanced" option on the preference category list.
4. Click Proxies.
5. Click the radio button "Direct Connection to the Internet".
6. Click OK to save.

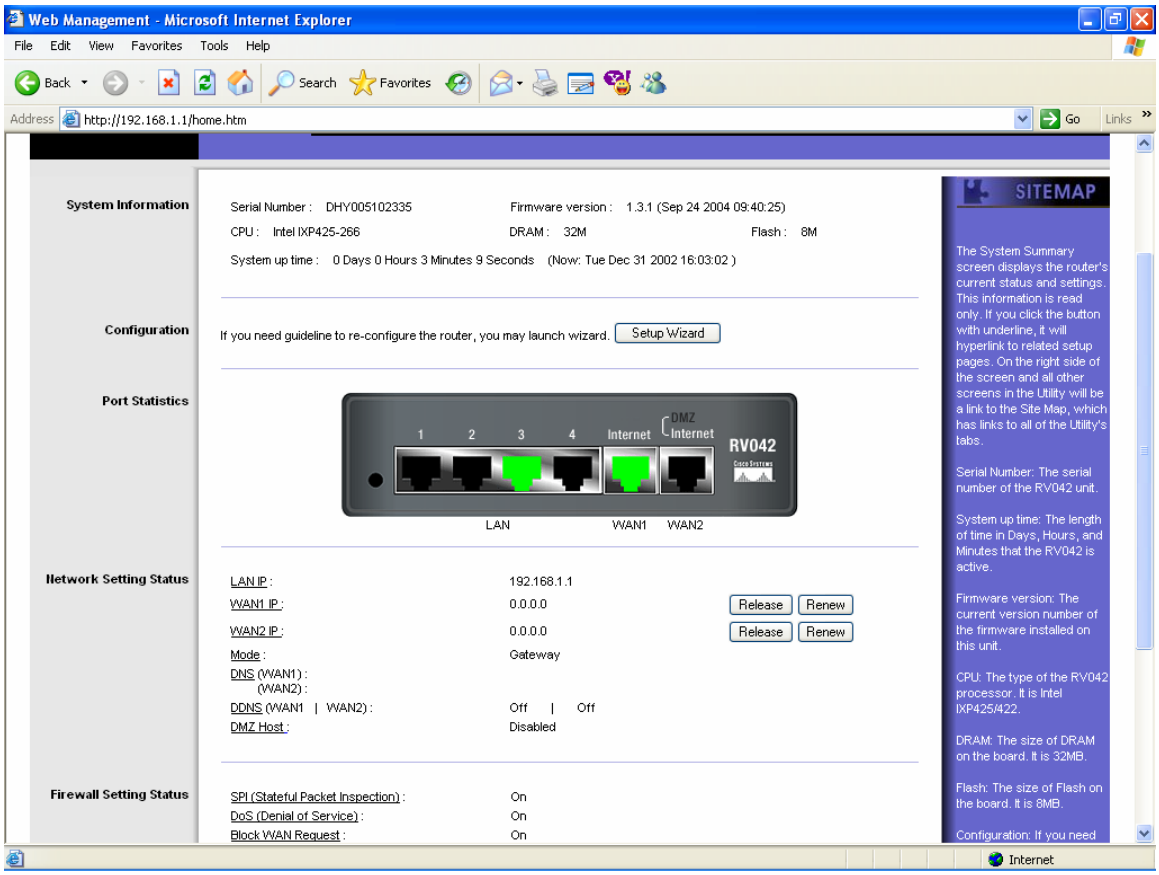
1.2 | Web Management

To access the Router's management interface, enter the Router IP address in your web browser **http://192.168.1.1.**

To log on as an administrator, enter the system password (the default User Name is **admin** and the default Password is **admin**) and click the **OK** button. If you typed the password correctly, the left panel of the Web user interface changes to the administrator configuration mode as shown in the following figures.

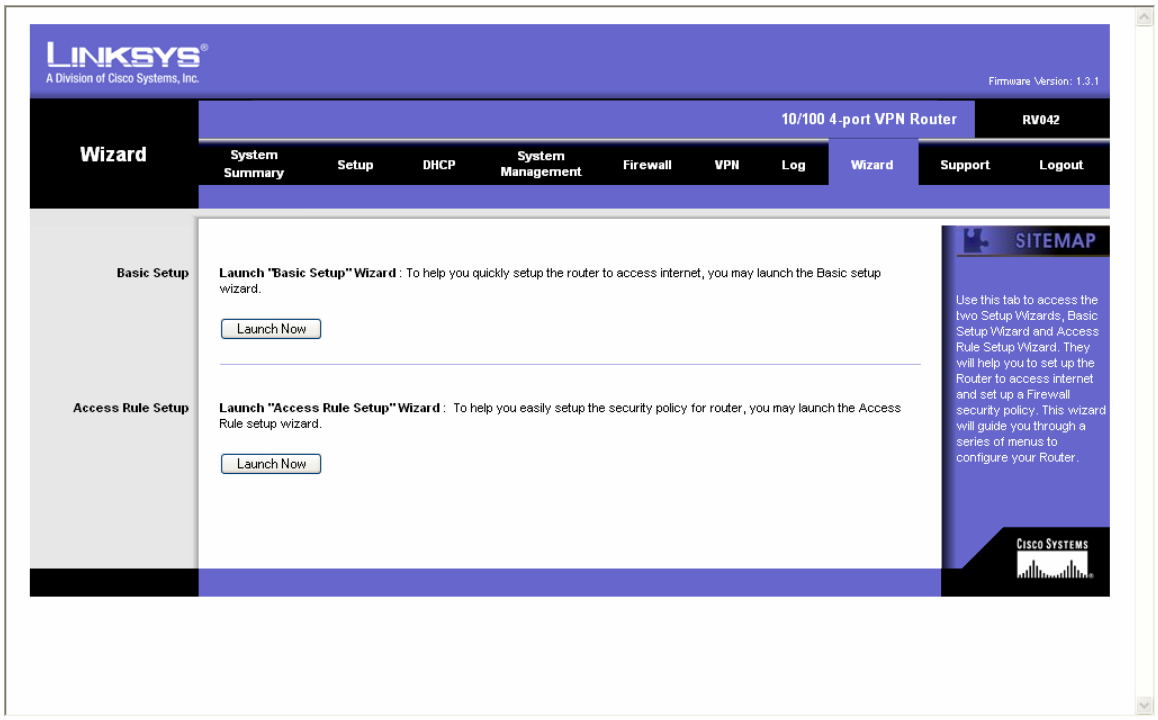
1.3 | Setup Wizard

Note: Select “Setup Wizard at the top center of the navigation panel in order to start you through the basic configuration screens.

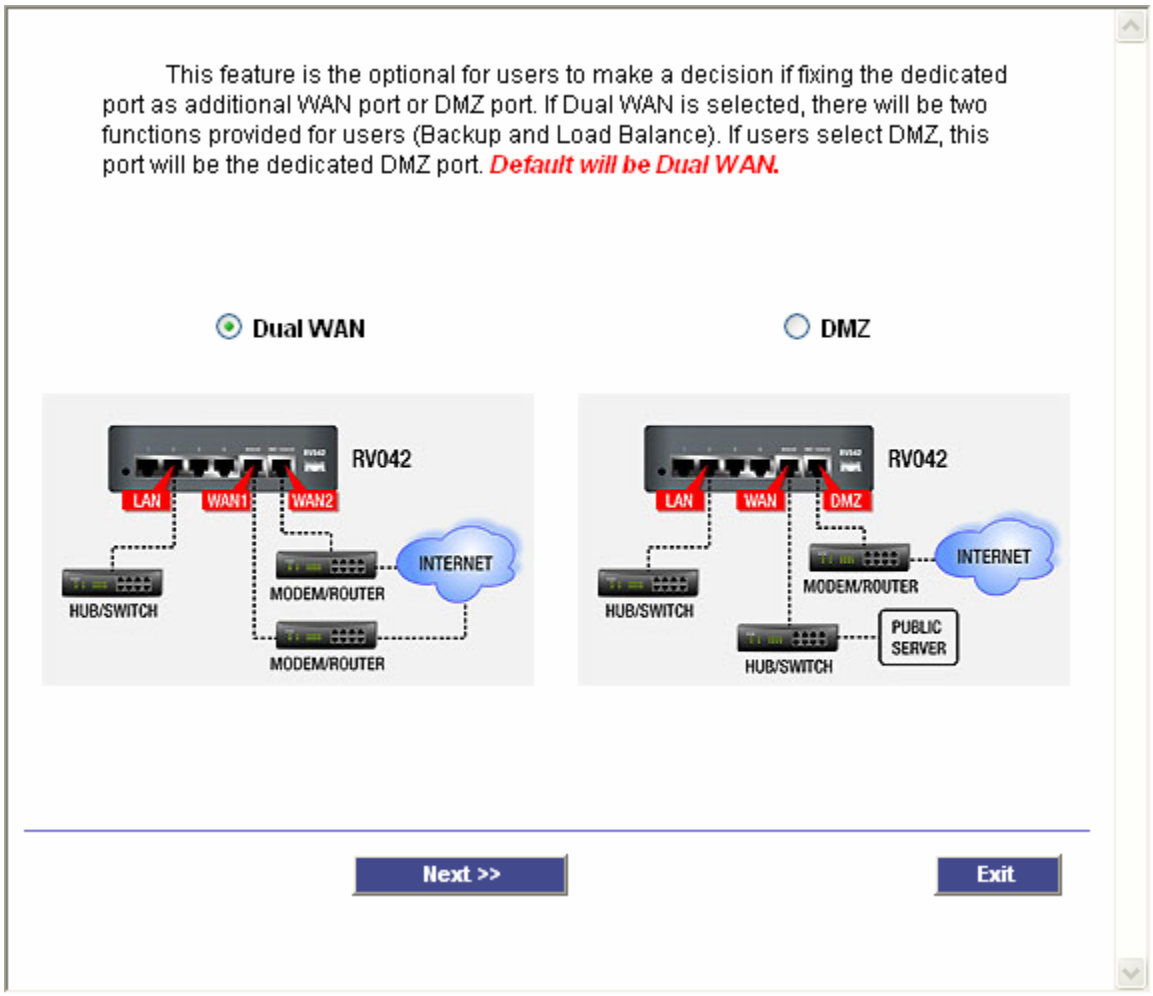

Web Management - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address http://192.168.1.1/home.htm
Go Links
System Information
Serial Number : DHY005102335
Firmware version : 1.3.1 (Sep 24 2004 09:40:25)
CPU : Intel IXP425-266
DRAM : 32M
Flash : 8M
System up time : 0 Days 0 Hours 3 Minutes 9 Seconds (Now: Tue Dec 31 2002 16:03:02)
Configuration
If you need guideline to re-configure the router, you may launch wizard.
Setup Wizard
Port Statistics
1 2 3 4 Internet DMZ Internet RV042
LAN WAN1 WAN2
Network Setting Status
LAN IP : 192.168.1.1
WAN1 IP : 0.0.0.0
Release Renew
WAN2 IP : 0.0.0.0
Release Renew
Mode : Gateway
DNS (WAN1) :
(WAN2) :
DDNS (WAN1 | WAN2) : Off | Off
DMZ Host : Disabled
Firewall Setting Status
SPI (Stateful Packet Inspection) : On
DoS (Denial of Service) : On
Block WAN Request : On
SITEMAP
The System Summary screen displays the router's current status and settings. This information is read only. If you click the button with underline, it will hyperlink to related setup pages. On the right side of the screen and all other screens in the Utility will be a link to the Site Map, which has links to all of the Utility's tabs.
Serial Number: The serial number of the RV042 unit.
System up time: The length of time in Days, Hours, and Minutes that the RV042 is active.
Firmware version: The current version number of the firmware installed on this unit.
CPU: The type of the RV042 processor. It is Intel IXP425/422.
DRAM: The size of DRAM on the board. It is 32MB.
Flash: The size of Flash on the board. It is 8MB.
Configuration: If you need
Internet

1.4 | Basic Setup

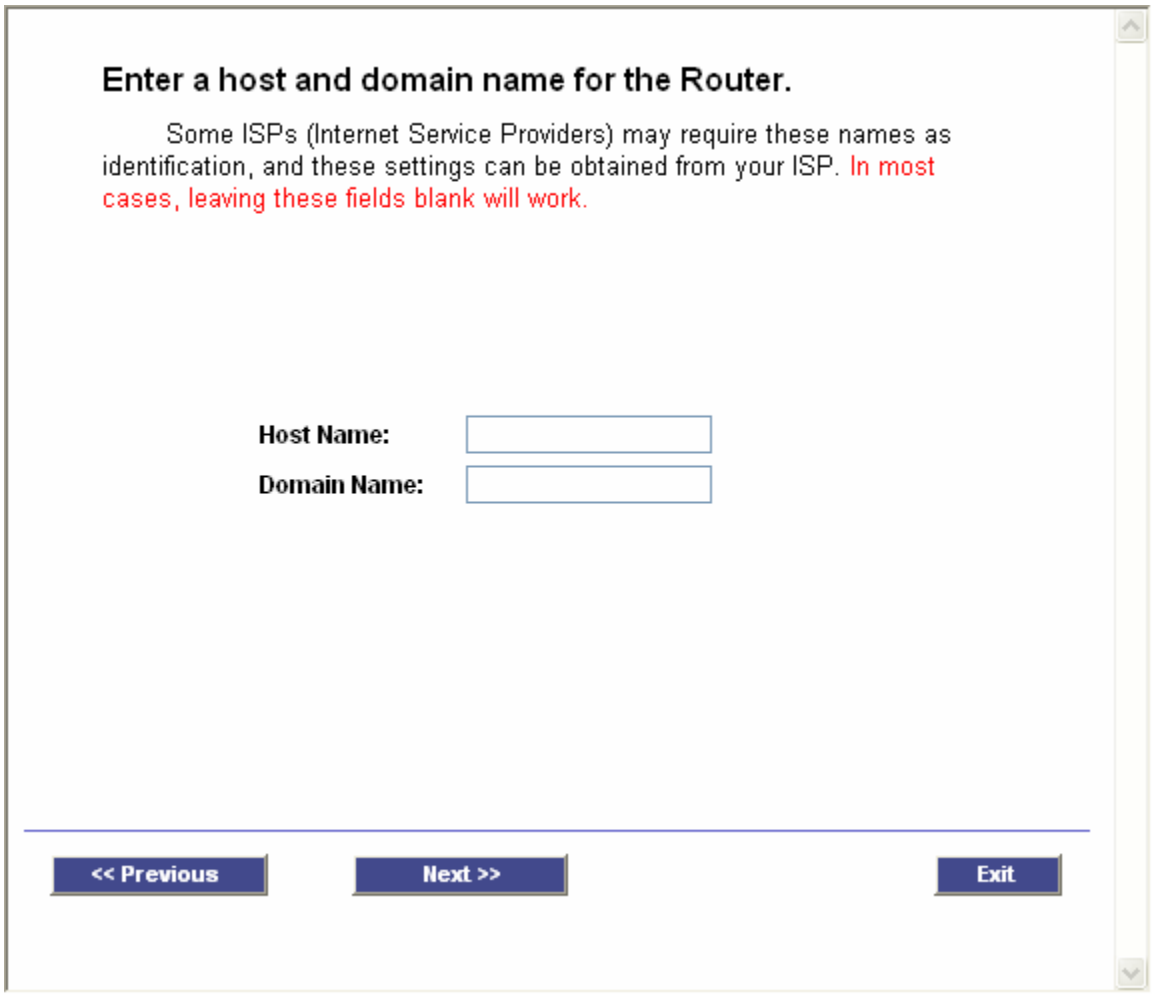
The first thing you need to complete is the Basic setup for the WAN parameters. Please click on the **"Launch Now"** button to start this process.


LINKSYS
A Division of Cisco Systems, Inc.
Firmware Version: 1.3.1
10/100 4-port VPN Router
RV042
Wizard
System Summary
Setup
DHCP
System Management
Firewall
VPN
Log
Wizard
Support
Logout
Basic Setup
Launch "Basic Setup" Wizard : To help you quickly setup the router to access internet, you may launch the Basic setup wizard.
Launch Now
Access Rule Setup
Launch "Access Rule Setup" Wizard : To help you easily setup the security policy for router, you may launch the Access Rule setup wizard.
Launch Now
SITEMAP
Use this tab to access the two Setup Wizards, Basic Setup Wizard and Access Rule Setup Wizard. They will help you to set up the Router to access internet and set up a Firewall security policy. This wizard will guide you through a series of menus to configure your Router.
Cisco Systems

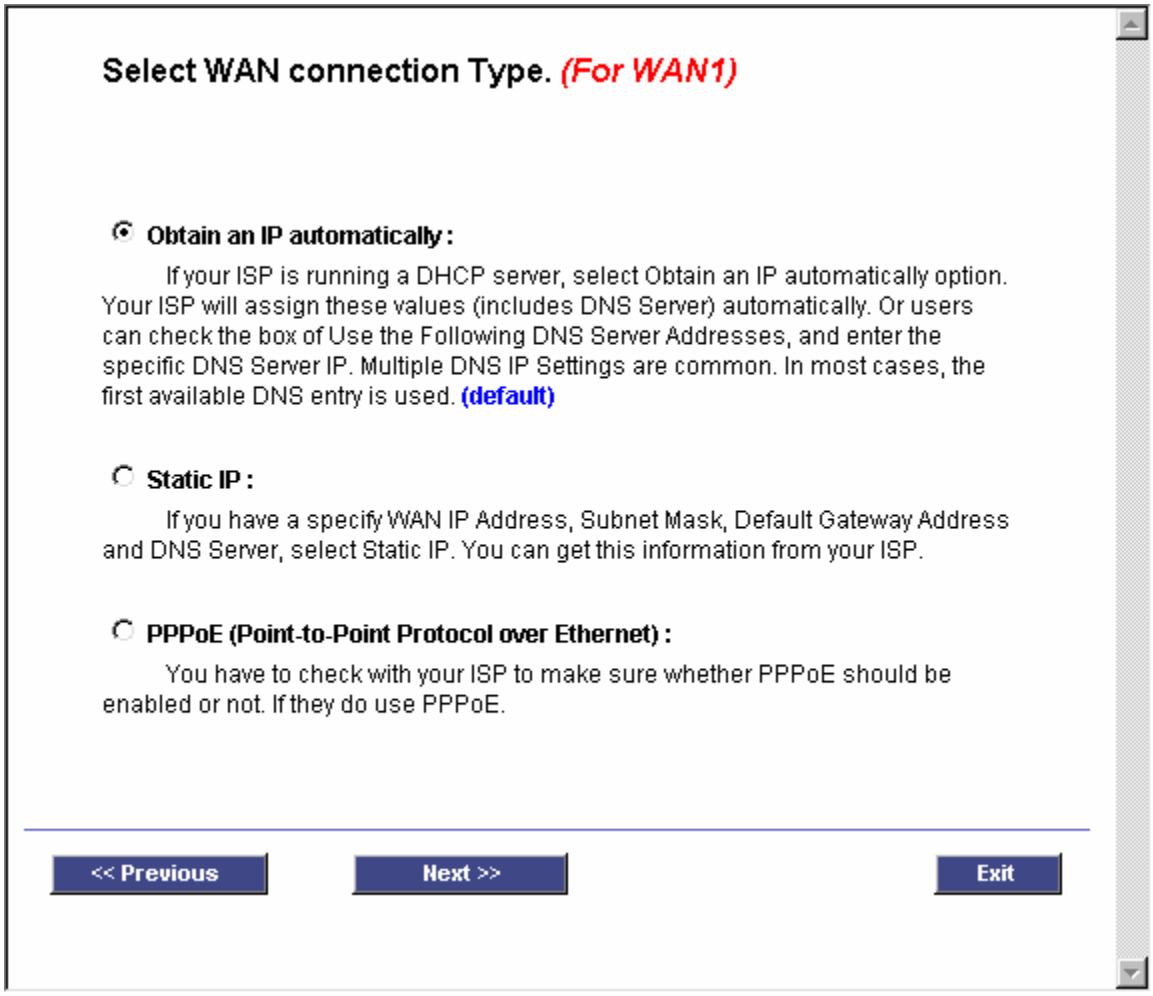
1.5 This screen is for informational purposes only. Please select **"Next>>"** to proceed.



1.6 Enter Host Name and Domain Name only if required by the ISP. Click on **"Next>>"** to proceed.

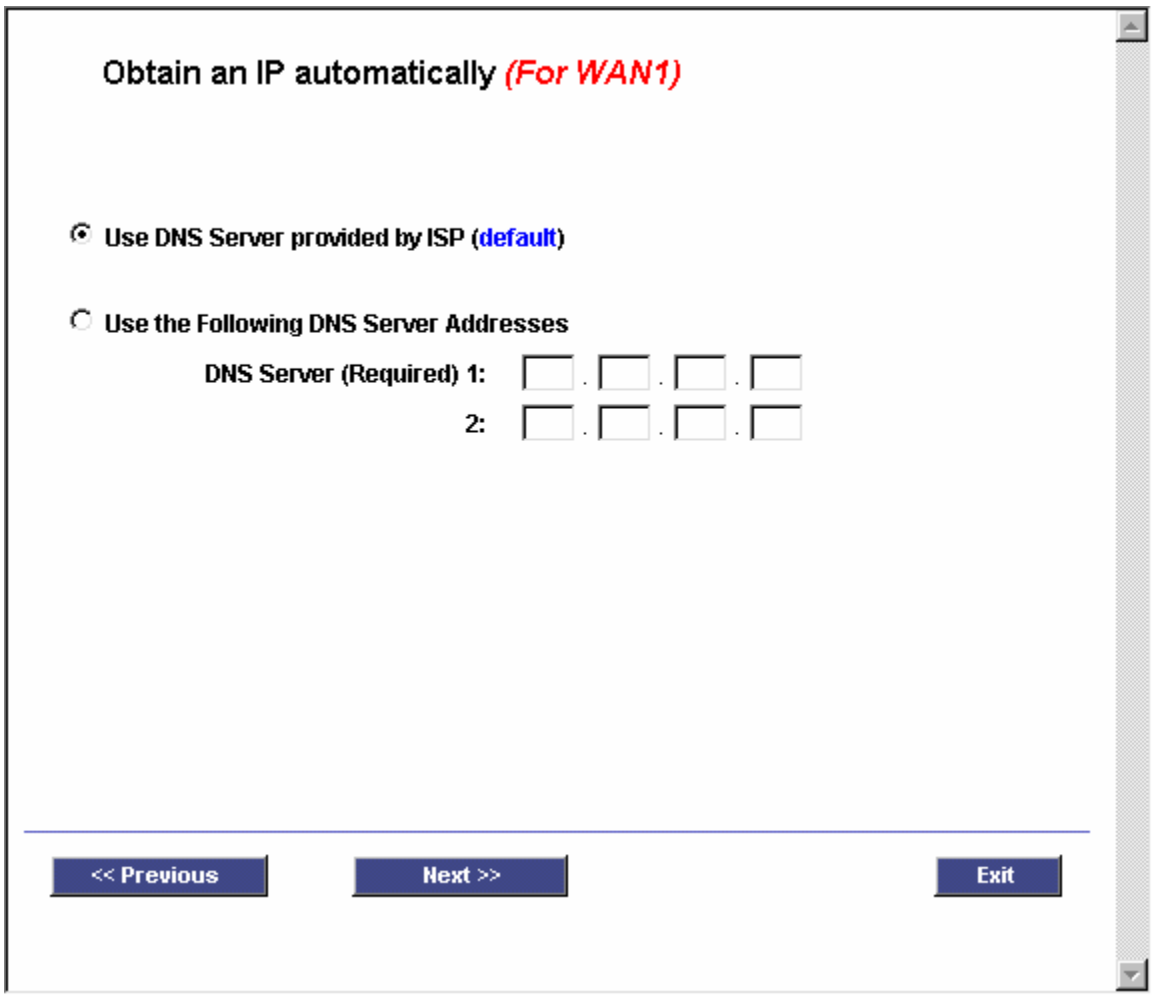

Enter a host and domain name for the Router.
Some ISPs (Internet Service Providers) may require these names as identification, and these settings can be obtained from your ISP. In most cases, leaving these fields blank will work.
Host Name:
Domain Name:
<< Previous
Next >>
Exit

1.7 Select the WAN connection type for the primary connection to your ISP.


Select WAN connection Type. (For WAN1)
Obtain an IP automatically :
If your ISP is running a DHCP server, select Obtain an IP automatically option. Your ISP will assign these values (includes DNS Server) automatically. Or users can check the box of Use the Following DNS Server Addresses, and enter the specific DNS Server IP. Multiple DNS IP Settings are common. In most cases, the first available DNS entry is used. (default)
Static IP :
If you have a specify WAN IP Address, Subnet Mask, Default Gateway Address and DNS Server, select Static IP. You can get this information from your ISP.
PPPoE (Point-to-Point Protocol over Ethernet) :
You have to check with your ISP to make sure whether PPPoE should be enabled or not. If they do use PPPoE.
<< Previous
Next >>
Exit

1.8 Obtain IP Automatically (For WAN 1)

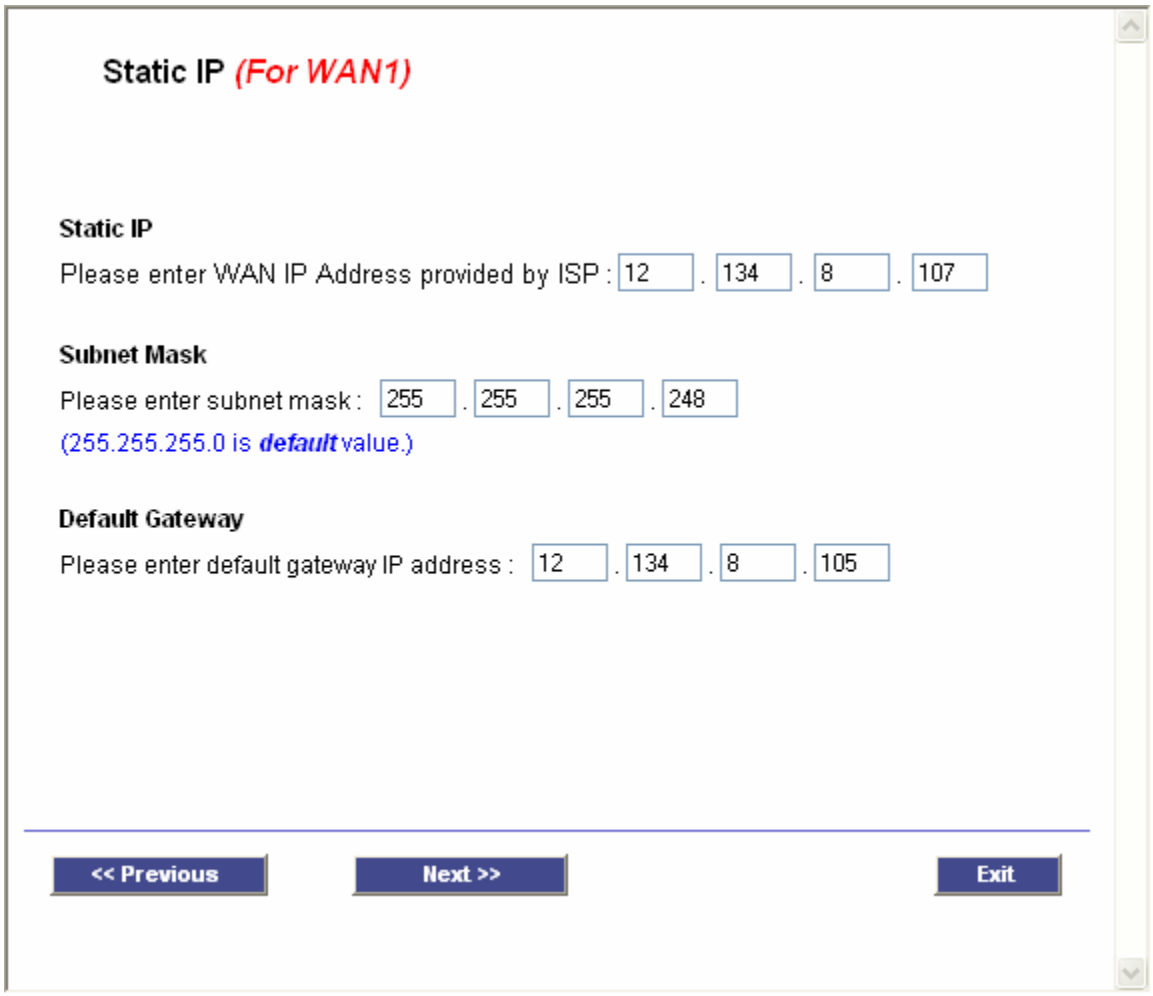
If you selected this option it will allow the router to receive a Dynamic IP address from the ISP. If necessary you may place DNS addressing here that will be used by the workstations. Click **"Next>>"** to proceed.



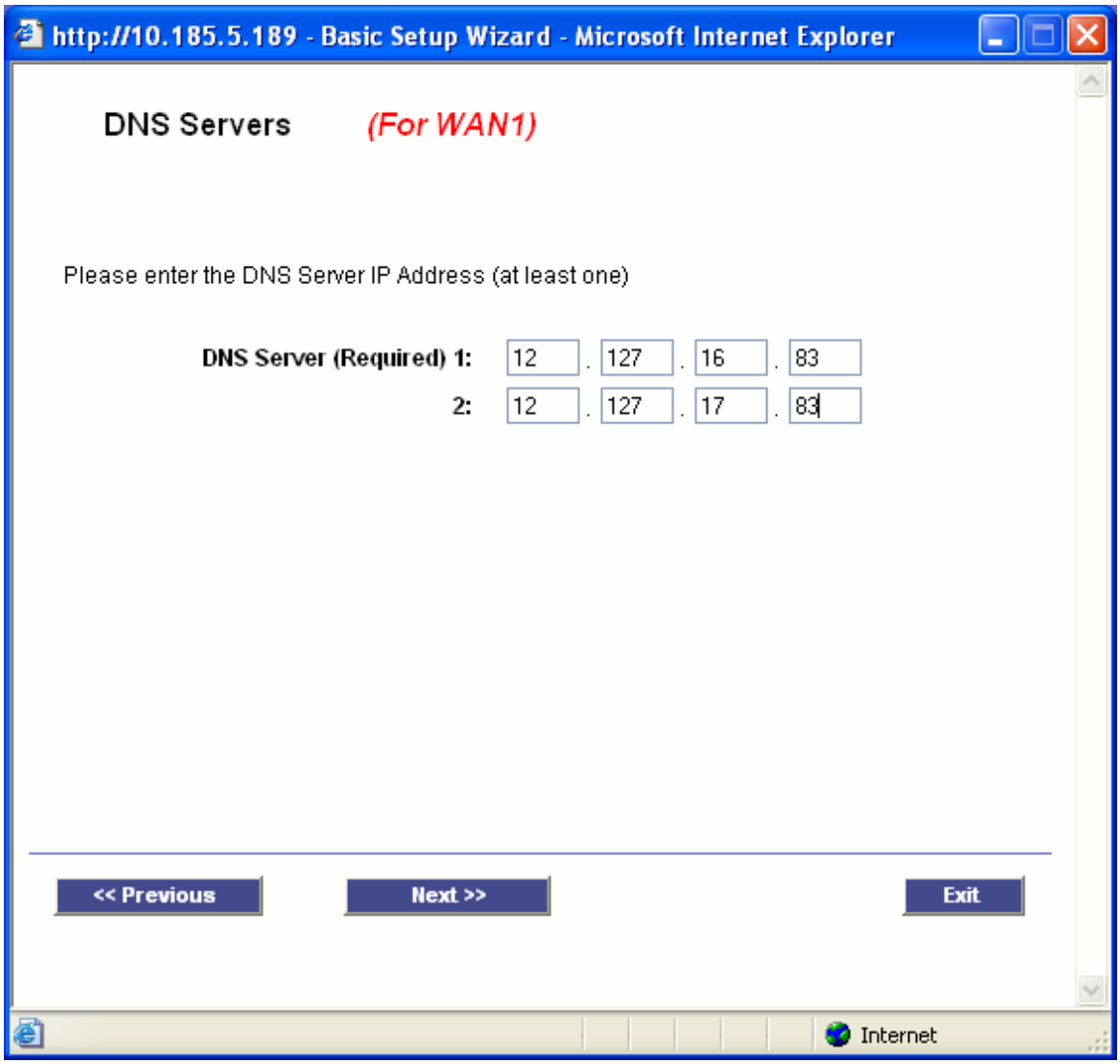
1.9 Static IP (For WAN 1)

If you selected this option this will allow you to assign a fixed (static) IP address. This address will be provided by your ISP. Enter the assigned IP address, Subnet Mask and Default Gateway IP address. Click **"Next>>"** in order to proceed.

Please note that these addresses are only an example. Your addresses will be provided by your ISP.

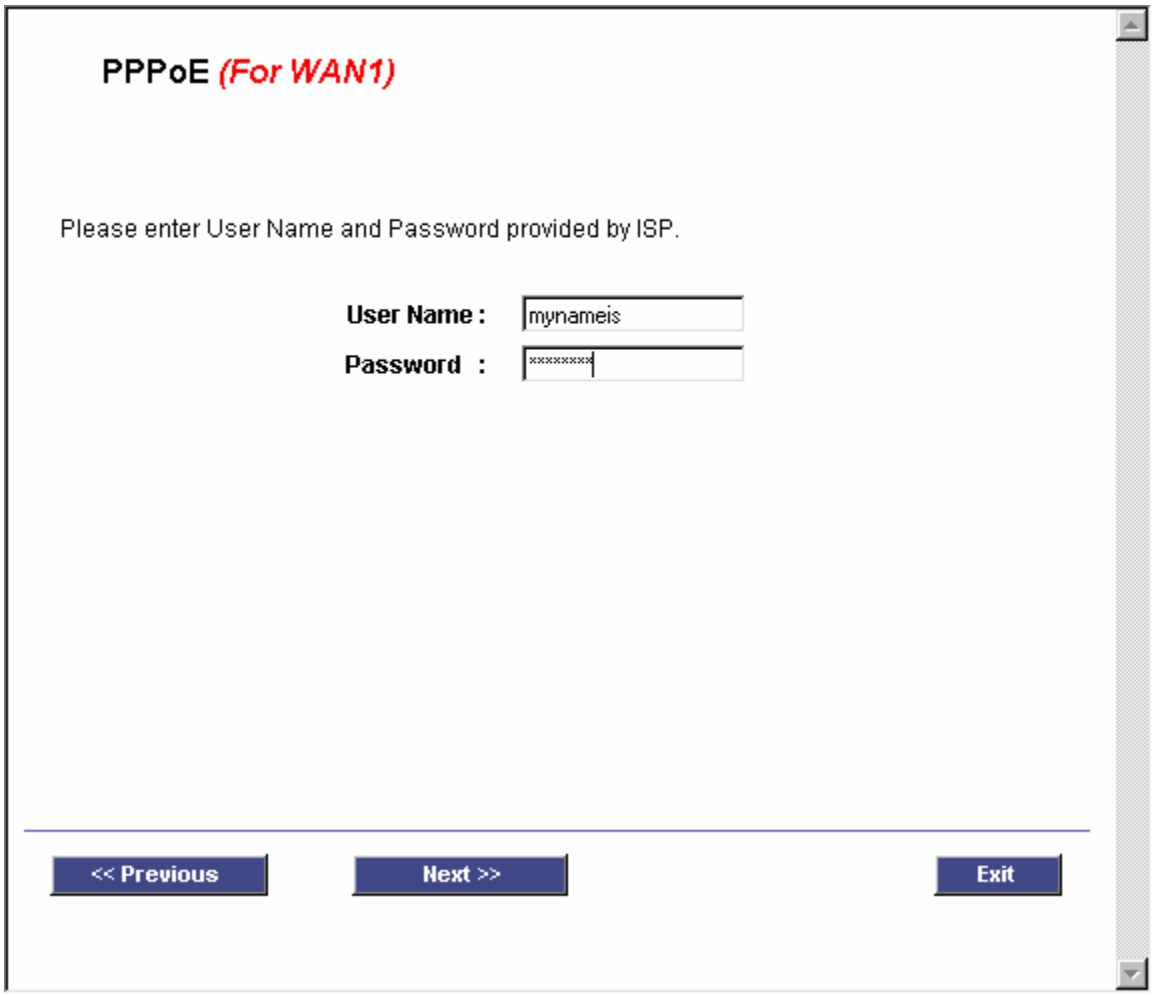

Static IP (For WAN1)
Static IP
Please enter WAN IP Address provided by ISP : 12 . 134 . 8 . 107
Subnet Mask
Please enter subnet mask : 255 . 255 . 255 . 248
(255.255.255.0 is default value.)
Default Gateway
Please enter default gateway IP address : 12 . 134 . 8 . 105
<< Previous
Next >>
Exit

1.10 DNS Server settings (For WAN 1)
This will be only for Static IP entries. These addresses will be provided by your ISP.


http://10.185.5.189 - Basic Setup Wizard - Microsoft Internet Explorer
DNS Servers
(For WAN1)
Please enter the DNS Server IP Address (at least one)
DNS Server (Required) 1:
12 . 127 . 16 . 83
2:
12 . 127 . 17 . 83
<< Previous
Next >>
Exit
Internet

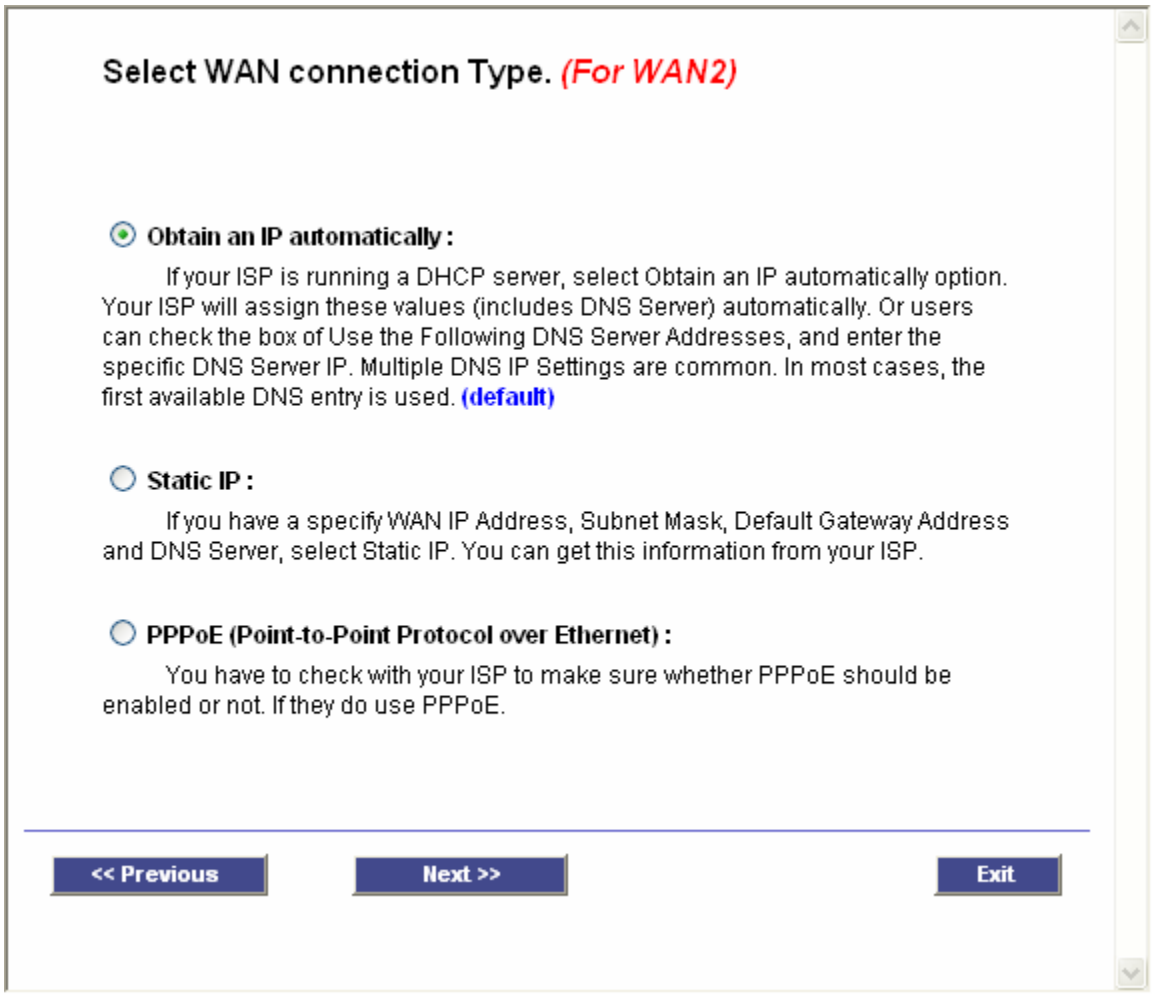
1.11 PPPoE (For WAN 1)

If you selected this option you must enter the information as provided by your ISP. Enter the PPPoE User Name and Password assigned by your Service Provider. Click **"Next>>"** to proceed.

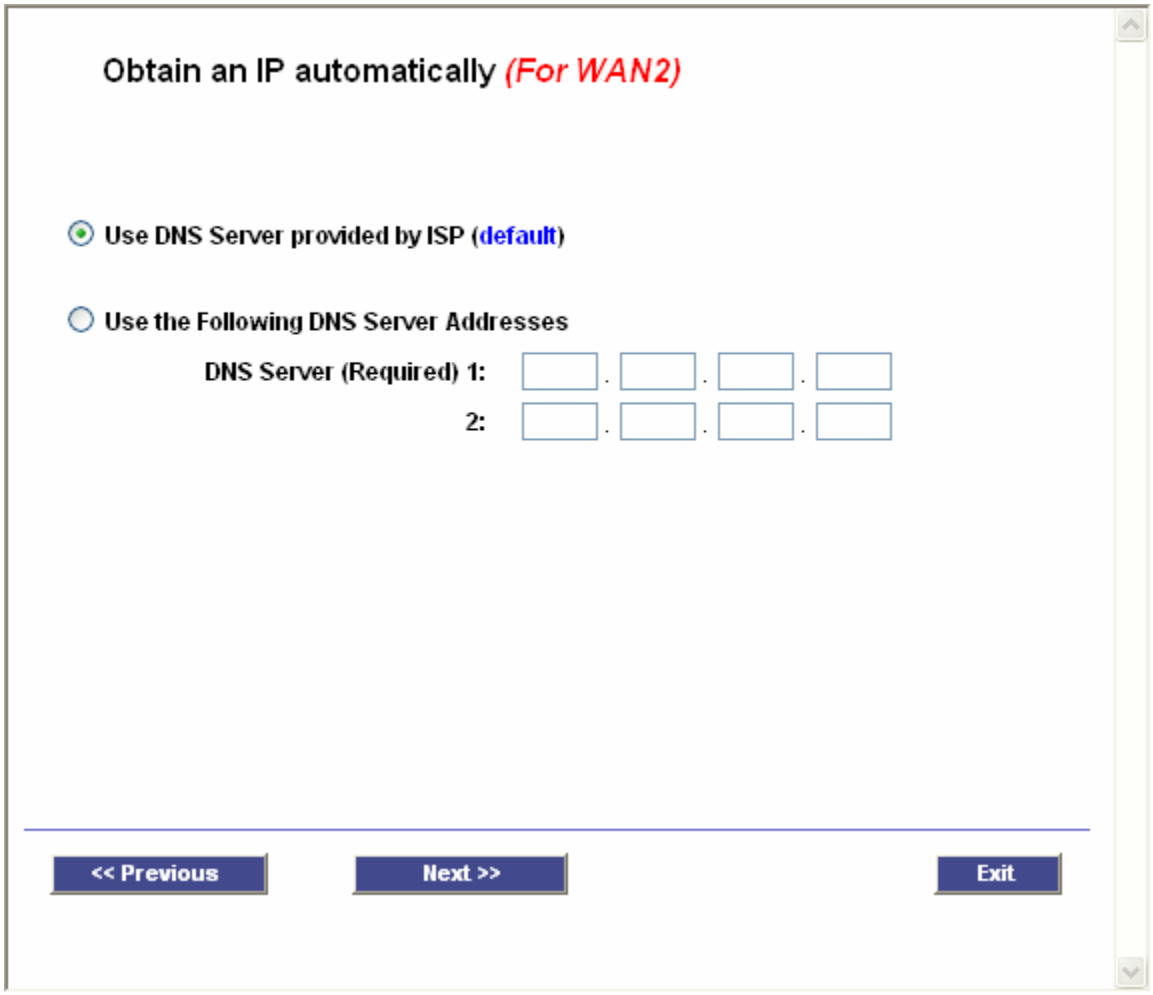


1.12 WAN 2 Setup

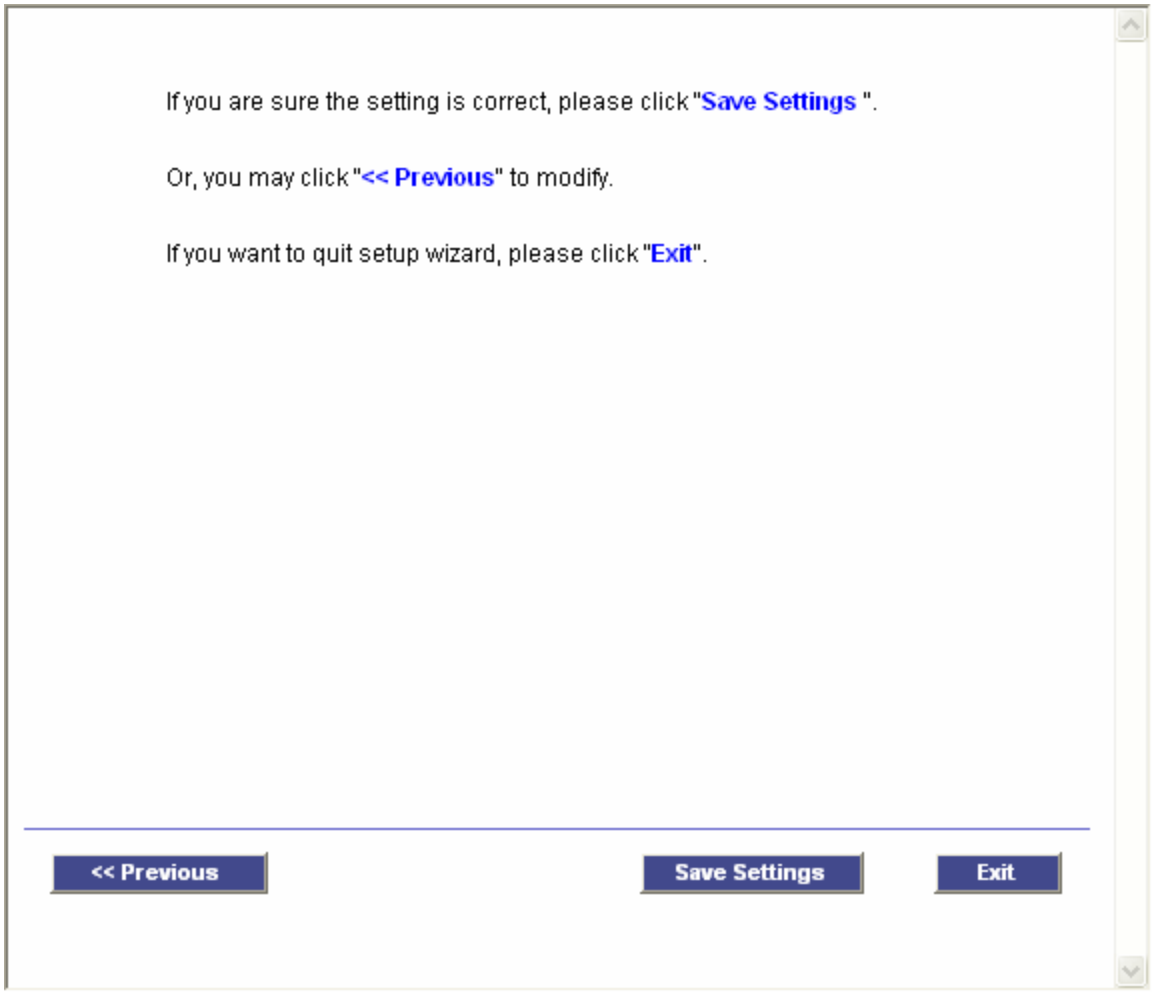
Although the router has the capabilities to use 2 Internet connections we generally only use the 1st configuration. You must progress through these configuration screens in order to get to the "Save Settings" screen Click "Next" to continue with the configuration.


Select WAN connection Type. (For WAN2)
Obtain an IP automatically :
If your ISP is running a DHCP server, select Obtain an IP automatically option. Your ISP will assign these values (includes DNS Server) automatically. Or users can check the box of Use the Following DNS Server Addresses, and enter the specific DNS Server IP. Multiple DNS IP Settings are common. In most cases, the first available DNS entry is used. (default)
Static IP :
If you have a specify WAN IP Address, Subnet Mask, Default Gateway Address and DNS Server, select Static IP. You can get this information from your ISP.
PPPoE (Point-to-Point Protocol over Ethernet) :
You have to check with your ISP to make sure whether PPPoE should be enabled or not. If they do use PPPoE.
<< Previous
Next >>
Exit

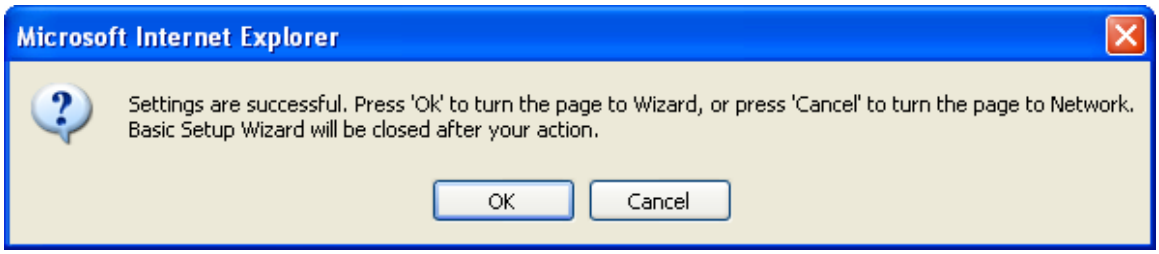
1.13 Obtain IP Automatically (For WAN 2)



1.14 Next select **“Save Settings”** in order to complete this step.

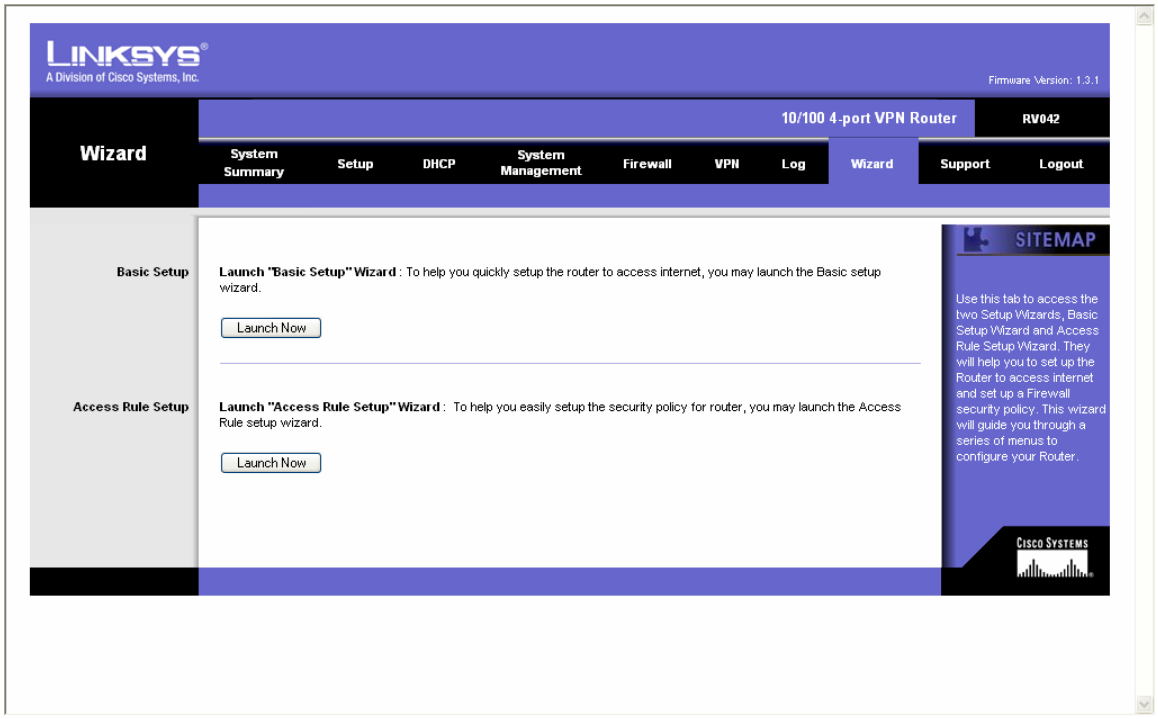

If you are sure the setting is correct, please click "Save Settings ".
Or, you may click "<< Previous" to modify.
If you want to quit setup wizard, please click "Exit".
<< Previous
Save Settings
Exit

1.15 Click on **“OK”** in order to finish the setup **for both WAN 1 & WAN 2**
.


Microsoft Internet Explorer
Settings are successful. Press 'Ok' to turn the page to Wizard, or press 'Cancel' to turn the page to Network.
Basic Setup Wizard will be closed after your action.
OK
Cancel

1.16 | Advanced Setup – LAN

Click on "Setup" on the menu at the top of the screen in order to validate the LAN settings. Additionally you will be able to change the LAN IP address of the Router at this time. (Device IP Address & Subnet Mask)


LINKSYS
A Division of Cisco Systems, Inc.
Firmware Version: 1.3.1
10/100 4-port VPN Router
RV042
Wizard
System Summary
Setup
DHCP
System Management
Firewall
VPN
Log
Wizard
Support
Logout
Basic Setup
Launch "Basic Setup" Wizard : To help you quickly setup the router to access internet, you may launch the Basic setup wizard.
Launch Now
Access Rule Setup
Launch "Access Rule Setup" Wizard : To help you easily setup the security policy for router, you may launch the Access Rule setup wizard.
Launch Now
SITEMAP
Use this tab to access the two Setup Wizards, Basic Setup Wizard and Access Rule Setup Wizard. They will help you to set up the Router to access internet and set up a Firewall security policy. This wizard will guide you through a series of menus to configure your Router.
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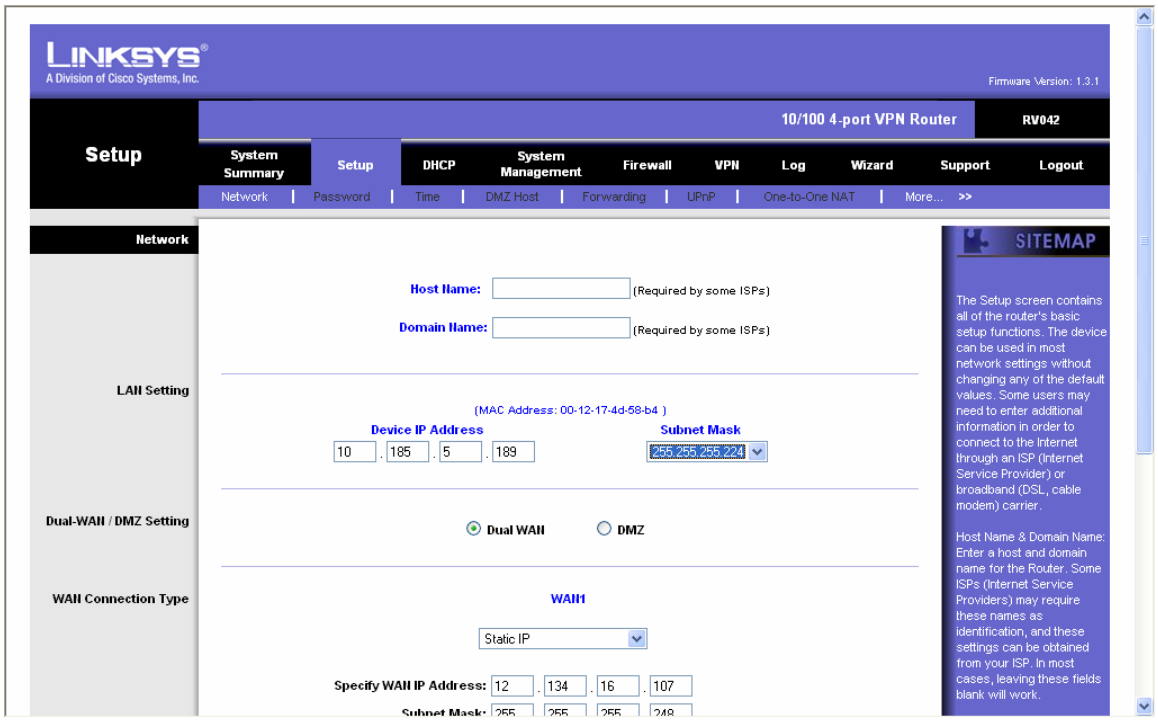
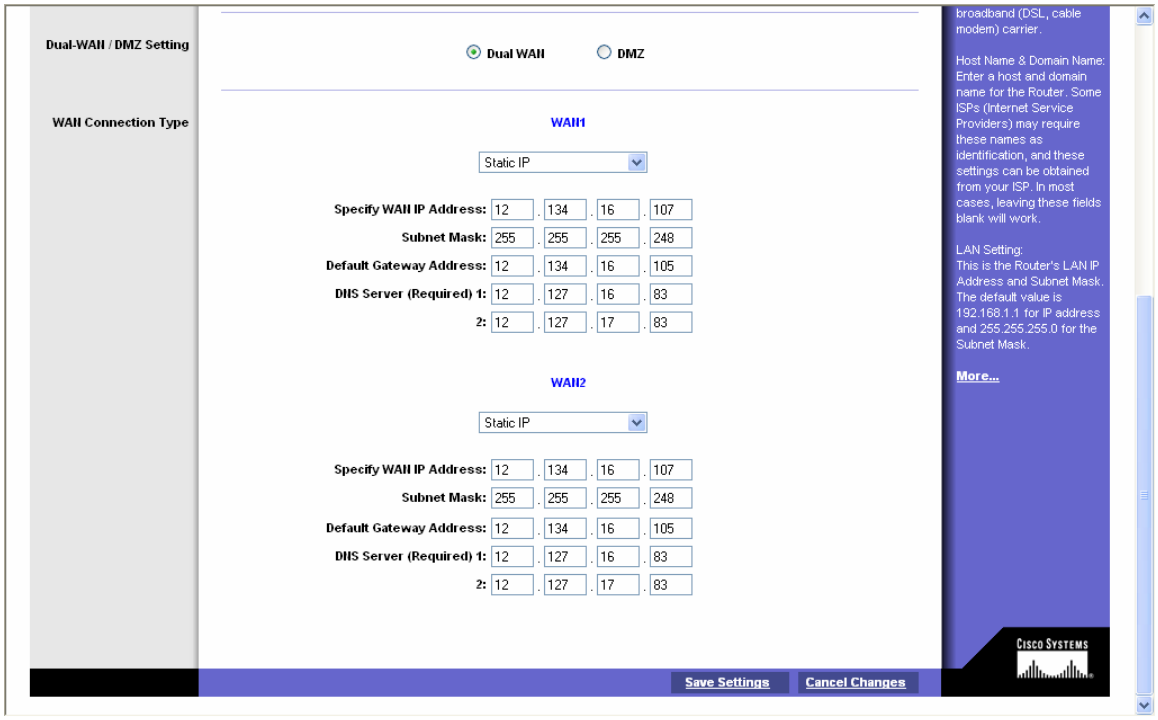
1.17 Setting the LAN IP address of the Router.
(Device IP Address & Subnet Mask)

This is the local LAN IP address of the router. All networked computers will use this address to get to the Internet. This is referred to as the “default Gateway”.
Special Note: The addresses you need to use are the addresses provided by Galileo International. Typically addresses are in the range of 10.185.X.X for U.S. locations and 10.57.x.x for Canadian locations. You will need to input the address of the router and the subnet mask as given to you by Galileo International.

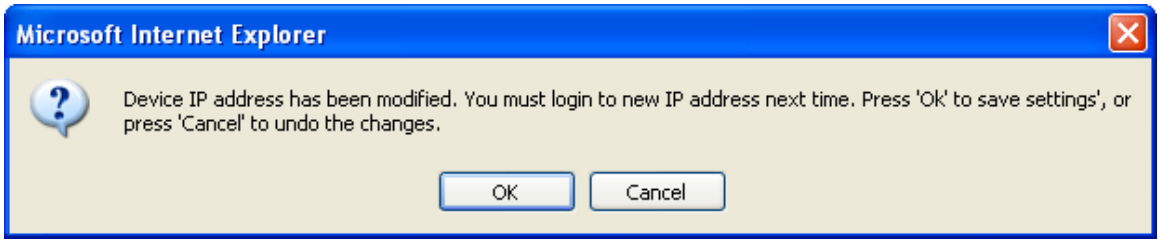

LINKSYS
A Division of Cisco Systems, Inc.
Firmware Version: 1.3.1
10/100 4-port VPN Router
RV042
Setup
System Summary
Setup
DHCP
System Management
Firewall
VPN
Log
Wizard
Support
Logout
Network | Password | Time | DMZ Host | Forwarding | UPnP | One-to-One NAT | More... >>
Network
Host Name: (Required by some ISPs)
Domain Name: (Required by some ISPs)
LAN Setting
(MAC Address: 00-12-17-4d-58-b4)
Device IP Address
10 . 185 . 5 . 189
Subnet Mask
255.255.255.224
Dual-WAN / DMZ Setting
Dual WAN
DMZ
WAN Connection Type
WAN1
Static IP
Specify WAN IP Address: 12 . 134 . 16 . 107
SITEMAP
The Setup screen contains all of the router's basic setup functions. The device can be used in most network settings without changing any of the default values. Some users may need to enter additional information in order to connect to the Internet through an ISP (Internet Service Provider) or broadband (DSL, cable modem) carrier.
Host Name & Domain Name: Enter a host and domain name for the Router. Some ISPs (Internet Service Providers) may require these names as identification, and these settings can be obtained from your ISP. In most cases, leaving these fields blank will work.

1.18 Click **"SAVE SETTINGS"** in order to save the configuration information.

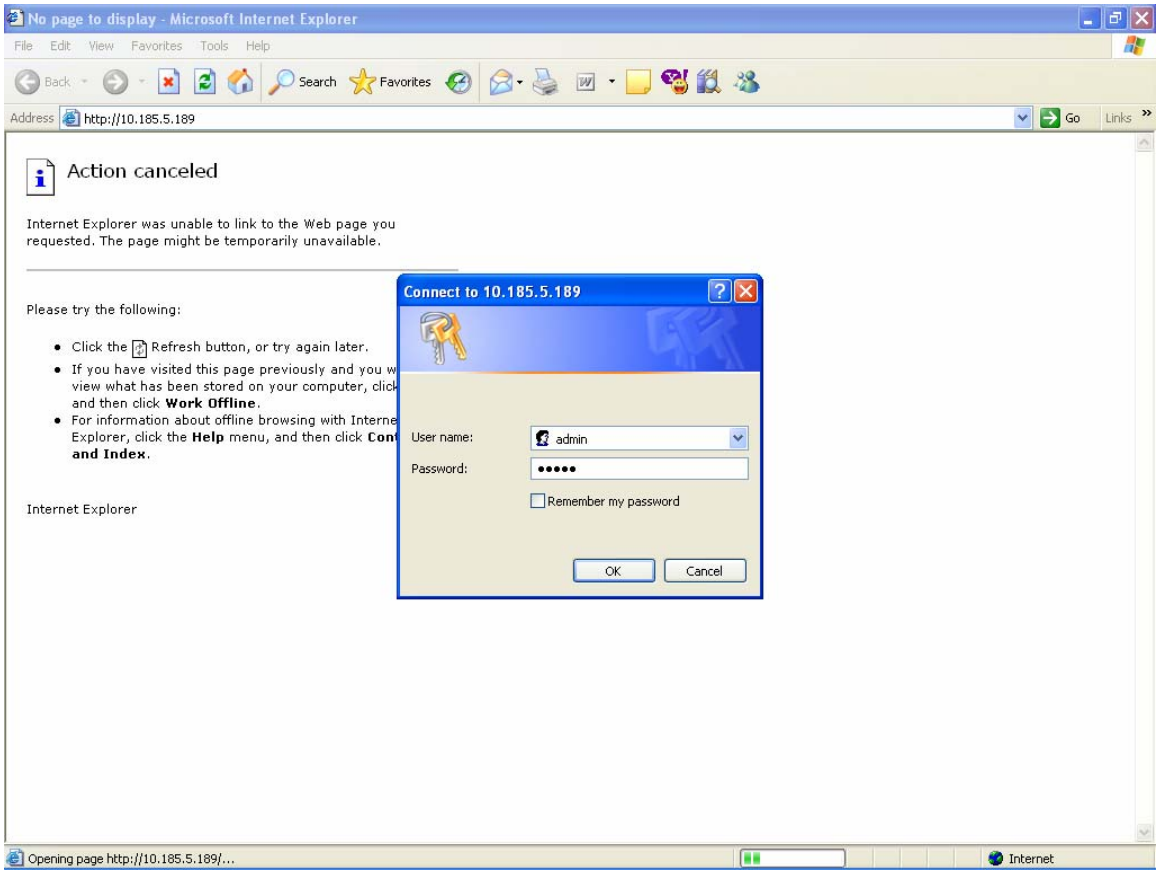

Dual-WAN / DMZ Setting
Dual WAN
DMZ
WAN Connection Type
WAN1
Static IP
Specify WAN IP Address: 12 . 134 . 16 . 107
Subnet Mask: 255 . 255 . 255 . 248
Default Gateway Address: 12 . 134 . 16 . 105
DNS Server (Required) 1: 12 . 127 . 16 . 83
2: 12 . 127 . 17 . 83
WAN2
Static IP
Specify WAN IP Address: 12 . 134 . 16 . 107
Subnet Mask: 255 . 255 . 255 . 248
Default Gateway Address: 12 . 134 . 16 . 105
DNS Server (Required) 1: 12 . 127 . 16 . 83
2: 12 . 127 . 17 . 83
broadband (DSL, cable modem) carrier.
Host Name & Domain Name: Enter a host and domain name for the Router. Some ISPs (Internet Service Providers) may require these names as identification, and these settings can be obtained from your ISP. In most cases, leaving these fields blank will work.
LAN Setting:
This is the Router's LAN IP Address and Subnet Mask. The default value is 192.168.1.1 for IP address and 255.255.255.0 for the Subnet Mask.
More...
Save Settings
Cancel Changes
Cisco Systems

Special Note: At this point you will be required to log in again to the router management system. You MUST insure that the IP address for your local machine has changed from the old address range (192.168.1.x) to the new address range that you input in the previous step 1.17!

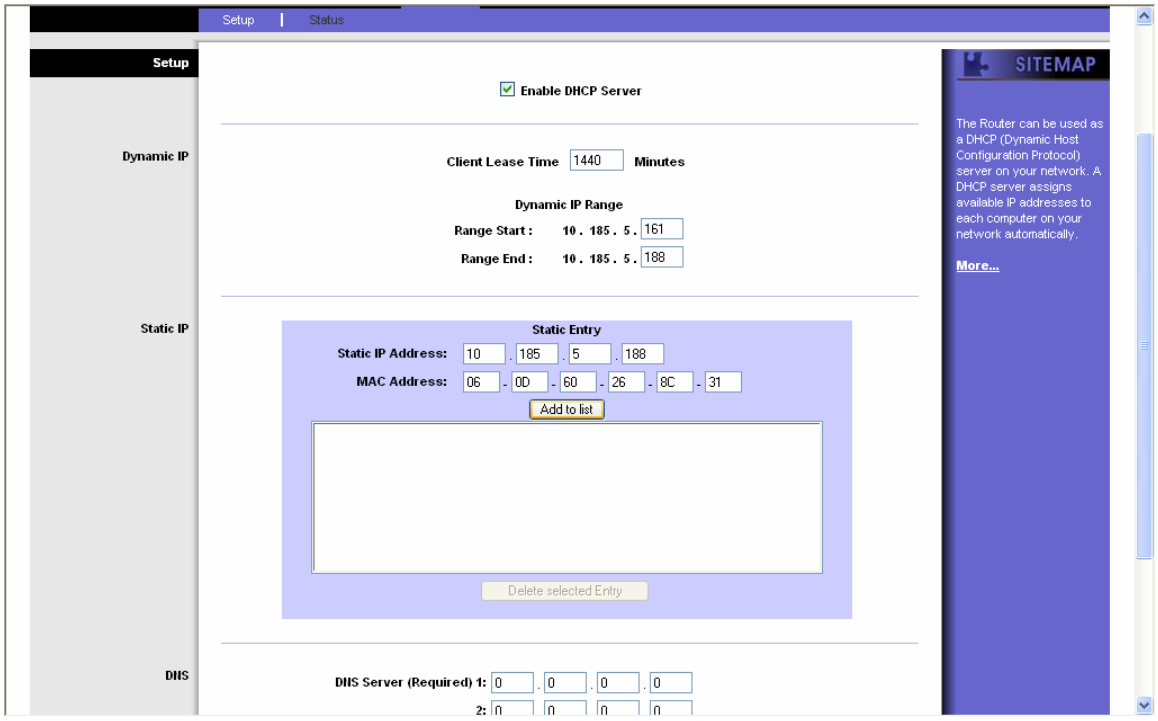
Click **"OK"** to accept the change for the IP Addressing.


Microsoft Internet Explorer
Device IP address has been modified. You must login to new IP address next time. Press 'Ok' to save settings', or press 'Cancel' to undo the changes.
OK
Cancel

The address for Admin login has now changed to your address range provided by Galileo. The User Name & Password remain the same.


No page to display - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address http://10.185.5.189
Go Links
Action canceled
Internet Explorer was unable to link to the Web page you requested. The page might be temporarily unavailable.
Please try the following:
Click the Refresh button, or try again later.
If you have visited this page previously and you w
view what has been stored on your computer, click
and then click Work Offline.
For information about offline browsing with Interne
Explorer, click the Help menu, and then click Cont
and Index.
Internet Explorer
Connect to 10.185.5.189
User name: admin
Password:
Remember my password
OK
Cancel
Opening page http://10.185.5.189/...
Internet

1.19 Select “DHCP” from the menu at the top of the screen. This will allow you to set the DHCP Scope for the workstations.
Please insure that the Range Start & Range End are the beginning & ending of the range provided by Galileo International excluding the address that will be used by the router. Start Range will usually be 1 more than the address of the router itself.


Setup
Status
Setup
Enable DHCP Server
Dynamic IP
Client Lease Time 1440 Minutes
Dynamic IP Range
Range Start : 10 . 185 . 5 . 161
Range End : 10 . 185 . 5 . 188
Static IP
Static Entry
Static IP Address: 10 . 185 . 5 . 188
MAC Address: 06 - 0D - 60 - 26 - 8C - 31
Add to list
Delete selected Entry
DNS
DNS Server (Required) 1: 0 . 0 . 0 . 0
SITEMAP
The Router can be used as a DHCP (Dynamic Host Configuration Protocol) server on your network. A DHCP server assigns available IP addresses to each computer on your network automatically.
More...

1.20 Reserve the IP Address for the GPM/FPM workstation. In order for the inbound Wakeup message to reach the GPM Workstation we need to reserve a static address for the GPM workstation. The router allows for this by the **Static Entry** field. You will need to obtain the Physical Address of the NIC card in the GPM box. You can accomplish this by starting a DOS command box on the GPM workstation.

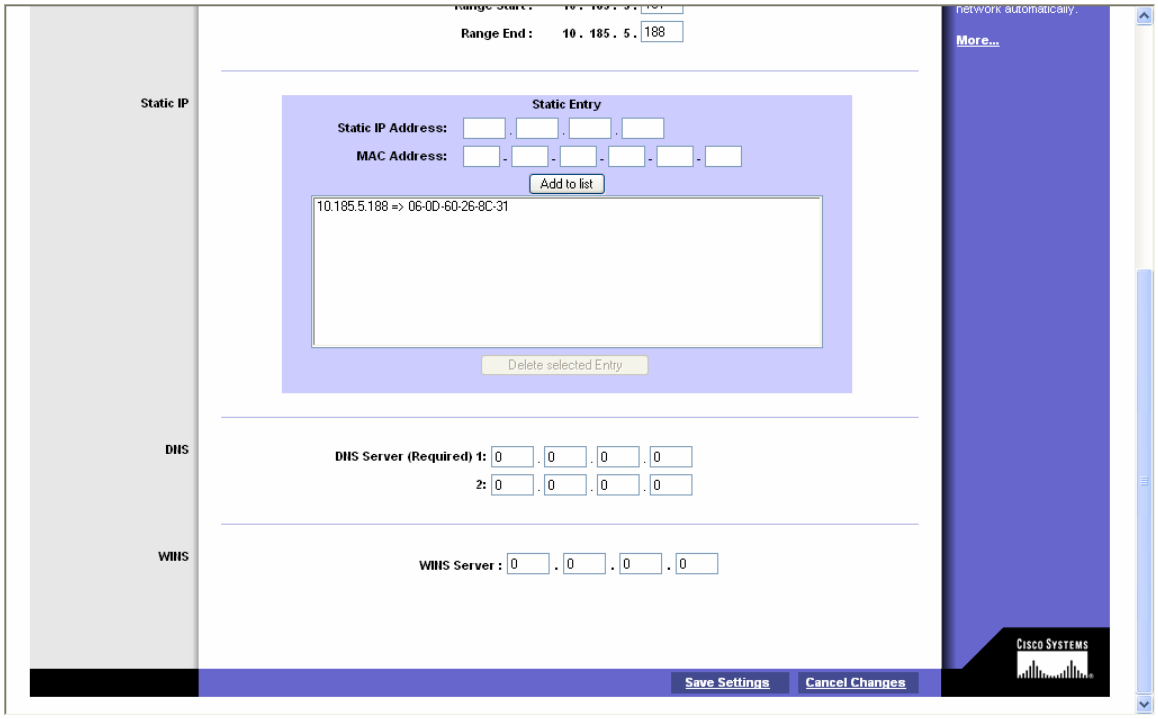
START RUN CMD (for Windows 2000 or Windows XP)
START RUN COMMAND (for Windows 9X)

Then at the command prompt type >IPCONFIG /ALL and record the Physical Address for the NIC card. (00-0D-60-26-8C-31)

```
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\>ipconfig /all

Windows IP Configuration

        Host Name . . . . . . . . . . . . : IBMS50
        Primary Dns Suffix  . . . . . . . :
        Node Type . . . . . . . . . . . . : Hybrid
        IP Routing Enabled. . . . . . . . : No
        WINS Proxy Enabled. . . . . . . . : No

Ethernet adapter Local Area Connection 3:

        Connection-specific DNS Suffix  . :
        Description . . . . . . . . . . . : Intel(R) PRO/100 VE Network Connecti
on
        Physical Address. . . . . . . . . : 00-0D-60-26-8C-31
        Dhcp Enabled. . . . . . . . . . . : Yes
        Autoconfiguration Enabled . . . . : Yes
        IP Address. . . . . . . . . . . . : 10.185.5.161
        Subnet Mask . . . . . . . . . . . : 255.255.255.224
        Default Gateway . . . . . . . . . : 10.185.5.189
        DHCP Server . . . . . . . . . . . : 10.185.5.189
        DNS Servers . . . . . . . . . . . : 10.185.5.189
        Lease Obtained. . . . . . . . . . : Tuesday, August 23, 2005 10:19:34 AM

        Lease Expires . . . . . . . . . . : Wednesday, August 24, 2005 10:19:34
AM

Ethernet adapter {4746AB87-3692-4FB0-BA26-64710874358A}:

        Connection-specific DNS Suffix  . :
        Description . . . . . . . . . . . : Nortel IPSECSHM Adapter - Packet Sch
eduler Miniport
        Physical Address. . . . . . . . . : 44-45-53-54-42-00
        Dhcp Enabled. . . . . . . . . . . : No
        IP Address. . . . . . . . . . . . : 0.0.0.0
        Subnet Mask . . . . . . . . . . . : 0.0.0.0
        Default Gateway . . . . . . . . . :
```

Click on **“Add to List”** in order add this entry into the table.

Click on **“Save Settings”** in order to complete this step.



Note: At this point of the configuration you should have internet connectivity. You can test your Internet access before proceeding to the next step.

Part 2 | VPN Tunnel Configuration of Your Broadband VPN Router (IPSec)

2.0 General Information

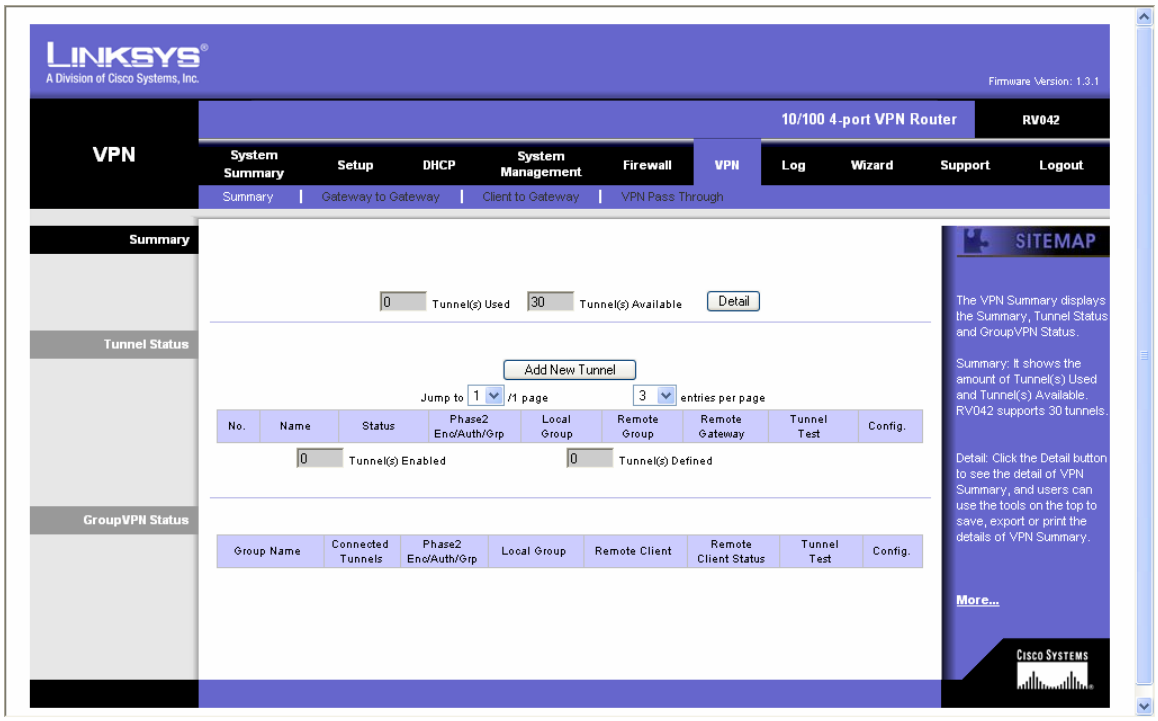
VPN settings are used to create virtual private tunnels to remote VPN gateways. The tunnel technology supports data confidentiality, data origin authentication and data integrity of network information, by utilizing encapsulation protocols, encryption algorithms, and hashing algorithms.

- VPN: VPN protects network information from intruders.

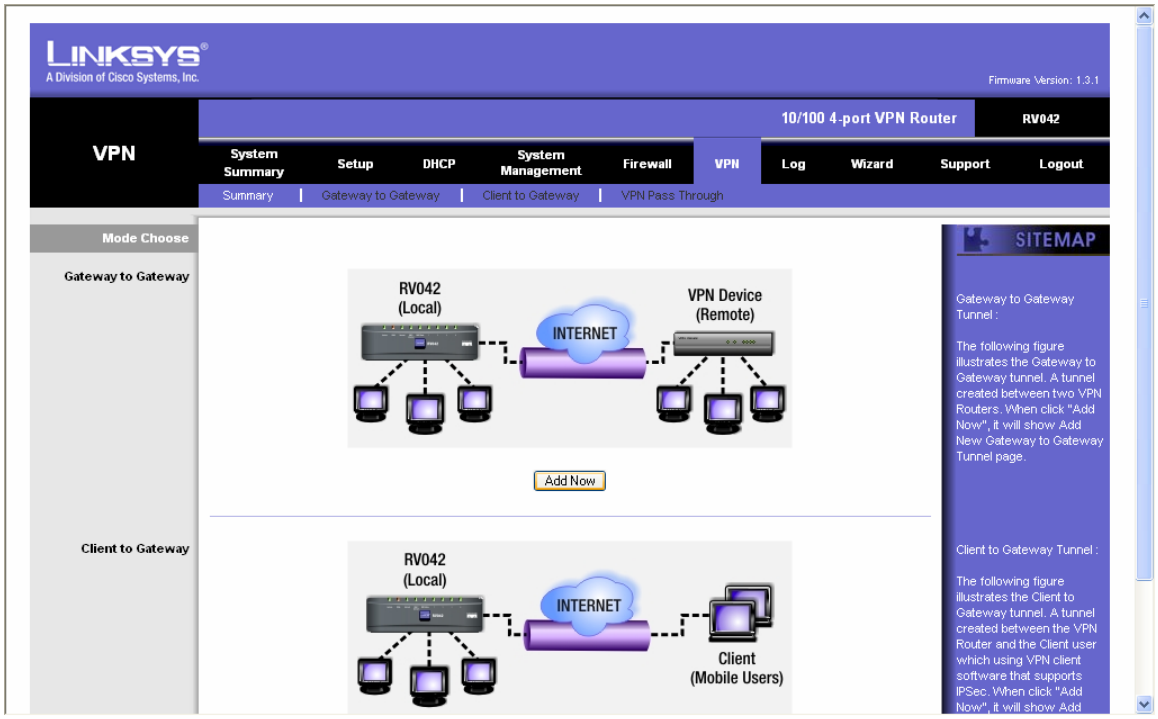
2.1 Basic Setup

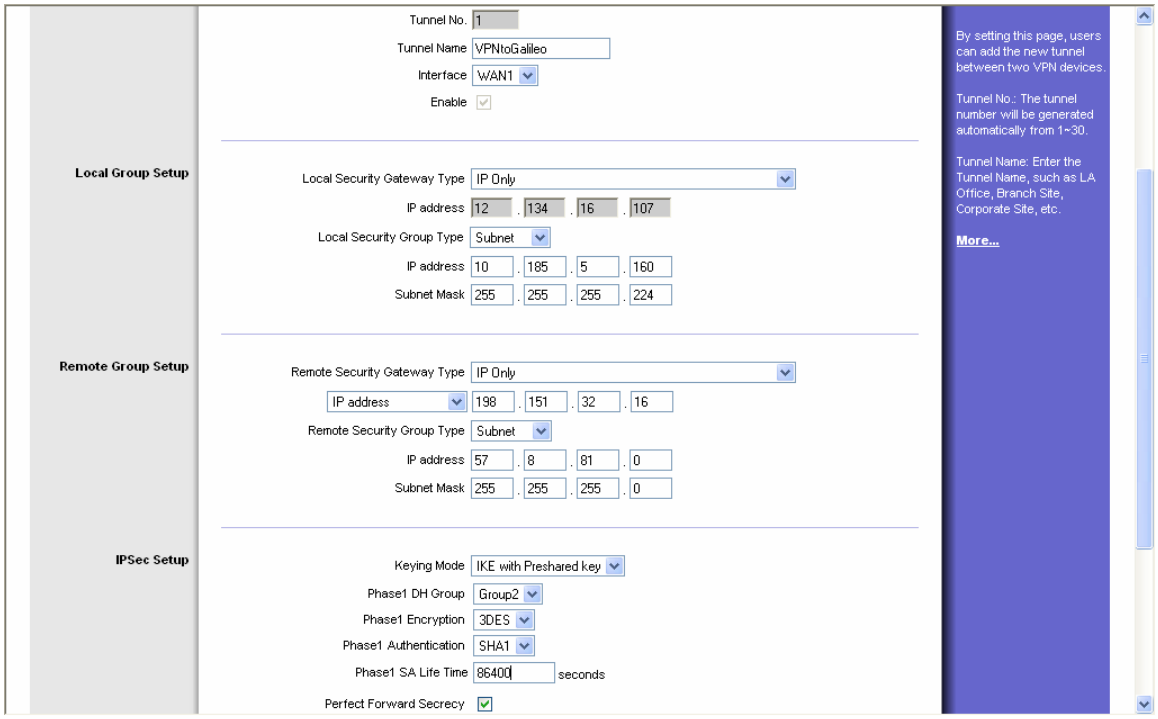
Click on VPN on the menu at the top of the screen in order to configure the VPN tunnel information.

Select **"Add New Tunnel"** from the center of the screen.



The tunnel we need to add is for “Gateway to Gateway”. Click on **“Add Now”** to proceed.

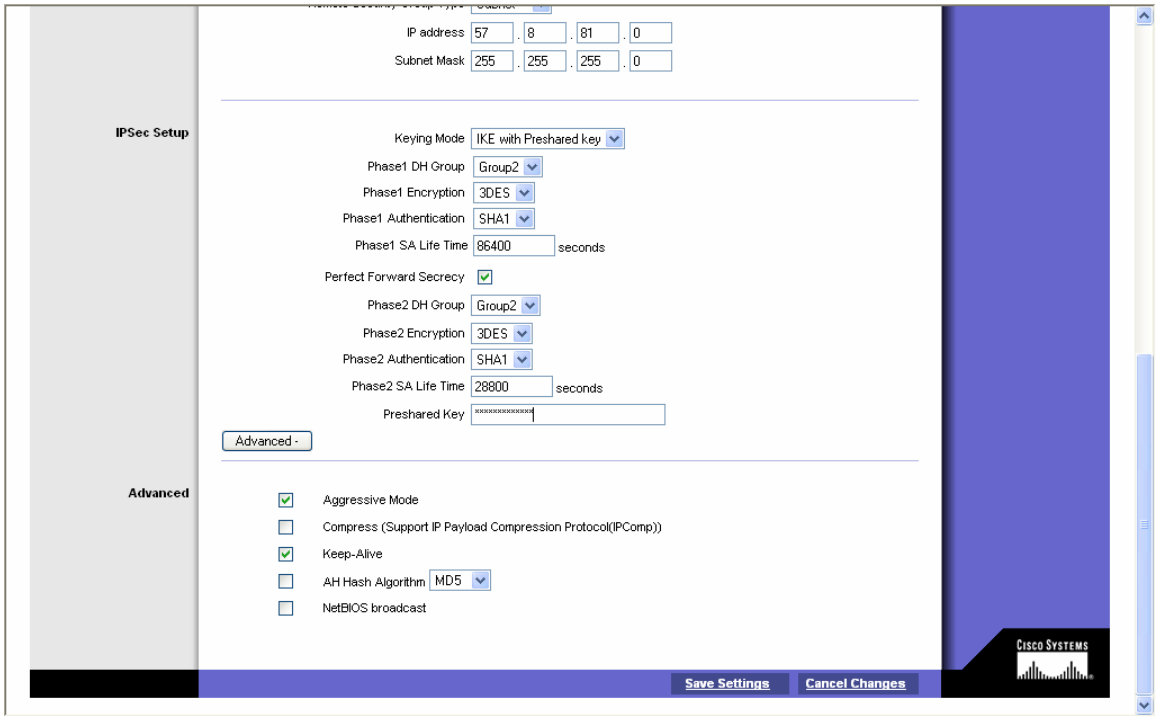

LINKSYS
A Division of Cisco Systems, Inc.
Firmware Version: 1.3.1
10/100 4-port VPN Router
RV042
VPN
System Summary
Setup
DHCP
System Management
Firewall
VPN
Log
Wizard
Support
Logout
Summary | Gateway to Gateway | Client to Gateway | VPN Pass Through
Mode Choose
Gateway to Gateway
RV042 (Local)
INTERNET
VPN Device (Remote)
Add Now
Client to Gateway
RV042 (Local)
INTERNET
Client (Mobile Users)
SITEMAP
Gateway to Gateway Tunnel :
The following figure illustrates the Gateway to Gateway tunnel. A tunnel created between two VPN Routers. When click "Add Now", it will show Add New Gateway to Gateway Tunnel page.
Client to Gateway Tunnel :
The following figure illustrates the Client to Gateway tunnel. A tunnel created between the VPN Router and the Client user which using VPN client software that supports IPSec. When click "Add Now", it will show Add


Tunnel No. 1
Tunnel Name VPNtoGalileo
Interface WAN1
Enable
Local Group Setup
Local Security Gateway Type IP Only
IP address 12 . 134 . 16 . 107
Local Security Group Type Subnet
IP address 10 . 185 . 5 . 160
Subnet Mask 255 . 255 . 255 . 224
Remote Group Setup
Remote Security Gateway Type IP Only
IP address 198 . 151 . 32 . 16
Remote Security Group Type Subnet
IP address 57 . 8 . 81 . 0
Subnet Mask 255 . 255 . 255 . 0
IPSec Setup
Keying Mode IKE with Preshared key
Phase1 DH Group Group2
Phase1 Encryption 3DES
Phase1 Authentication SHA1
Phase1 SA Life Time 86400 seconds
Perfect Forward Secrecy
By setting this page, users can add the new tunnel between two VPN devices.
Tunnel No.: The tunnel number will be generated automatically from 1~30.
Tunnel Name: Enter the Tunnel Name, such as LA Office, Branch Site, Corporate Site, etc.
More...

There are many settings that must be configured to enable VPN for a dedicated tunnel:

- **Tunnel Name**. The tunnel name is simply a name for this tunnel **(i.e.VPNtoGalileo)**
- **Local Group Setup:**
  - Local Security Gateway Type: IP Only
  - IP Address: This will be pre-filled in from the WAN IP address as previously selected.
  - Local Security Group Type: Subnet
  - IP Address: The Network address assigned by Galileo. This is usually 1 less than the Router address. **(i.e. 10.185.5.160)**
  - Subnet Mask: Subnet mask provided by Galileo. **(i.e.255.255.255.224)**
- **Remote Security group:**
  - Remote Security Gateway Type: IP Only
  - IP Address: This is the address of the Remote PEER provided by Galileo **(i.e. 198.151.32.16)**
  - Remote Security group type: Subnet
  - IP Address: This is the address of the remote network to get to Galileo services. This will be one of the following networks:
    - **57.8.81.0 – Galileo Production Net 1**
    - **198.177.164.0 – Galileo Production Net 2**
    - **167.125.0.0 – Galileo Canada Leisure Link**
  - Subnet Mask: **255.255.255.0**
- **IPSec setup: Phase 1**
  - Keying Mode: **IKE with Preshared Key**
  - Phase 1 DH group: **Group 2**
  - Phase 1 Encryption: **3DES**
  - Phase 1 Authentication: **SHA1**
  - Phase 1 SA Lifetime: **86400** seconds
- **IPSec Setup: Phase 2**
  - Perfect forward Secrecy: **Not checked**
  - Phase 2 DH group: **Group 2**
  - Phase 2 Encryption: **3DES**
  - Phase 2 Authentication: **SHA1**
  - Phase 2 SA Lifetime: **28800** seconds
  - Preshared Key: Provided by Galileo as needed
- **Advanced:**
  - Aggressive Mode: **Checked**
  - Compress (Support IP Payload Compression Protocol(IP Comp)): Not Checked
  - Keep Alive: **Checked**
  - AH Hash Algorithm: Not Checked
  - Netbios Broadcast: Not Checked

Click on **“Save Settings”** to complete this step.



Click on **“OK”** to complete the VPN Tunnel definition.

Microsoft Internet Explorer
Settings are successful. Press 'Ok' to add another Gateway to Gateway Tunnel, or press 'Cancel' to return to the page of VPN Summary.
OK
Cancel

Note: You will need to repeat this step as necessary for each network that is required using a different name for each tunnel.

As an example in the US we need to create 2 tunnels.

VPNtoGalileo1 => 57.8.81.0 (Galileo Print Traffic)
VPNtoGalileo2 => 198.177.164.0 (Galileo Terminal Traffic)

In Canada we will need to create 2 tunnels also.

VPNtoGalileo => 57.8.81.0 (Galileo Print & Terminal Traffic)
VPNtoLeisureLink => 167.125.0.0 (Galileo Leisure Link)

In order to check the status of the VPN connection you can access the screen by selecting **"VPN"** from the menu at the top of the screen. This will display status as Connected when the tunnel is up.